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XUV probing of laser imprint in a thin foil using an x-ray laser backlighter[*] D.H. Kalantar, L.B. DaSilva, S.G. Glendinning, B.A. Remington, F. Weber, S.V. Weber, *Lawrence Livermore National Laboratory*, M.H. Key, D. Neely, E. Wolfrum, *Rutherford Appleton Laboratory, U.K.*, A. Demir, J. Lin, R. Smith, G.J. Tallents, *Essex Univeristy, U.K.*, N.S. Kim, J.S. Wark, J. Zhang, *Oxford University, U.K.*, C.L.S. Lewis, A. McPhee, J. Warwick, *Queens University, U.K.*, J.P. Knauer, *LLE, University of Rochester* - For direct drive ICF, a capsule is imploded by directly illuminating the surface with laser light. Beam smoothing and uniformity of illumination affect the seeding of instabilities at the ablation front. We have developed a new technique for studying the imprint of a laser beam on a thin foil using an x-ray laser as an XUV backlighter. We use multilayer XUV optics to relay the x-ray laser onto the directly driven foil, and then to image the foil modulation onto a CCD camera. This technique allows us to measure small fractional variations in the foil thickness. We measured the modulation due to imprint from a low intensity 0.35 μm drive beam incident on a 3 μm Si foil using an yttrium x-ray laser on Nova. We used a similar technique to measure the imprinted modulation due to a low intensity 0.53 μm drive beam incident on a 2 μm Al foil using a germanium x-ray laser at the Vulcan facility.

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